CLAIMS

What is claimed is:

1. In a deposition chamber, a method of improving adhesion of a cap layer to a porous material layer on a wafer, said method comprising the steps of:

a) receiving said wafer in said deposition chamber;

b) depositing said porous material layer on said wafer, said porous material layer having a top surface;

c) densifying a portion of said porous material layer in order to make it more compatible for adhesion with said cap layer; and

d) depositing said cap layer on top of said top surface of said porous material layer.

2. The method recited in Claim 1 wherein said porous material layer is a nanoglass material.

3. The method recited in Claim 2 wherein said nanoglass material is a highly porous silicon dioxide material.

4. The method recited in Claim 1 wherein said portion of said porous material layer is an upper portion, said upper portion including said top surface of said porous material layer.

5. The method recited in Claim 1 wherein said densifying step is accomplished by exposing said porous material layer to a high density plasma.

6. The method recited in Claim 5 wherein said high density plasma is a stream of Argon (Ar) ions.

7. The method recited in Claim 1 further comprising the step of:

e) self-limiting said densifying operation.

8. The method recited in Claim 1 wherein said cap layer is an oxide cap layer.

9. The method recited in Claim 1 wherein said cap layer is a Plasma Enhanced Chemical Vapor Deposition (PECVD) oxide layer.

10. A wafer comprising:

a substrate; and

a layer of porous material located above said substrate, said layer of porous material comprising:

a first portion having a baseline density associated with said porous material; and

a second portion having a density greater than said baseline density associated with said porous material, said second portion located above said first portion.

11. The wafer recited in Claim 10 wherein said first portion of said layer of porous material resides on top of said substrate.

12. The wafer recited in Claim 10 wherein said layer of porous material is a nanoglass material.

13. The wafer recited in Claim 10 wherein said layer of porous material is a porous silicon dioxide material.

14. The wafer recited in Claim 10 wherein said second portion of said layer of porous material achieves a higher density as a result of receiving a high density plasma.

15. The wafer recited in Claim 14 wherein said high density plasma is a stream of Argon (Ar) ions.

16. The wafer recited in Claim 10 further comprising a cap layer located above said layer of said porous material.

17. The wafer recited in Claim 16 wherein said cap layer is an oxide layer.

18. The wafer recited in Claim 17 wherein said oxide layer is a Plasma Enhanced Chemical Vapor Deposition (PECVD) oxide layer.

19. A deposition chamber adapted to improve adhesion of a cap layer to a porous layer on a wafer, said deposition chamber comprising:

a processor; and

a computer readable memory, said computer readable memory coupled to said processor, said computer readable memory containing program instructions stored therein that when executed over said processor implement a method for improving adhesion of a cap layer to a porous layer on a wafer, said method comprising the steps of:

a) receiving said wafer in said deposition chamber;

b) depositing said porous material layer on said wafer, said porous material layer having a top surface;

c) densifying a portion of said porous material layer in order to make it more compatible for adhesion with said cap layer; and

d) depositing said cap layer on top of said top surface of said porous material layer.

20. The deposition chamber recited in Claim 19 wherein said porous material layer is a nanoglass material.

21. The deposition chamber recited in Claim 20 wherein said nanoglass material is a highly porous silicon dioxide material.

22. The deposition chamber recited in Claim 19 wherein said portion of said porous material layer is an upper portion, said upper portion including said top surface of said porous material layer.

23. The deposition chamber recited in Claim 19 wherein said densifying step is accomplished by exposing said porous material layer to a high density plasma.

24. The deposition chamber recited in Claim 23 wherein said high density plasma is a stream of Argon (Ar) ions.

25. The deposition chamber recited in Claim 19 further comprising the step of:

e) self-limiting said densifying operation.

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